

What is claimed:

- 1 1. A method of allocating PID values to a program in a digital transport stream,
2 the digital transport stream including at least one program including of a plurality of
3 elementary streams, the method comprising the steps of:
4 (a) assigning a session number to a session, wherein the session is associated
5 with a program having a plurality of elementary streams;
6 (b) associating a PMT_PID value with the session number;
7 (c) assigning a set of PID values to the elementary streams of the program; and
8 (d) indicating in a map of allocable PID values the assigned PID values.
- 1 2. The method of claim 1, further including the step of:
2 associating the session number with an output port, wherein the program that
3 is associated with the session is transmitted from the output port.
4
- 1 3. The method of claim 1, prior to step (a), further including the step of:
2 determining from a map of session numbers an unassigned session number,
3 wherein the unassigned session number is the session number assigned
4 to the session in step (a).
- 1 4. The method of claim 3, wherein the map of session numbers is an array of
2 elements, each element of the array is associated with a session number and has an
3 unassigned state and an assigned state; and further including the step of:
4 when the session number is assigned to the session, indicating the state of the
5 element that is associated with the session number as assigned.
- 1 5. The method of claim 4, wherein the elements of the array are checked based
2 upon their index values in the array, and the element having the lowest index value
3 and an unassigned state is assigned to the session.
- 1 6. The method of claim 3, wherein the map of session numbers is a plurality of
2 arrays, each array of the plurality of arrays is associated with an output port.

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7. The method of claim 1, prior to the steps of (a), (b), (c) and (d), further including the step of:

receiving a session message having a program indicator included therein,
wherein the in response to the session message steps (a), (b) and (c) are implemented to assign a first session number to a first session that is associated with a first program identified by the program identifier, associate a first PMT_PID value to the first session number and assign a first set of PID values to the elementary streams of the first program; and after steps of (a), (b) and (c), further including the step of:
transmitting from a device the elementary streams of the program in a digital transport stream.

8. The method of claim 7, wherein the device that transmits the program has a plurality of output ports that are adapted to transmit digital transport streams, and the session message further includes an output port identifier that identifies the output port of the plurality of output ports from which the elementary streams of the first program are transmitted.

9. The method of claim 8, wherein the first session is associated with the output port identified by the output port identifier.

10. The method of claim 9, further including the steps of:

receiving a second session message having a second output port identifier and a second program indicator included therein, wherein the second program indicator identifies a second program, wherein the output port identifier identifies an output port, and wherein in response to the second message steps (a), (b) and (c) are implemented to assign a second session number to a second session that is associated with the second program, associate a second PMT_PID value to the second session number and assign a second set of PID values to the elementary streams of the second program; and

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11 transmitting from the output port identified by the second session message the
12 elementary streams of the second program.
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1 11. The method of claim 10, wherein the output port associated with the first
2 session is different from the second output port, the first and second session numbers
3 are the same, and the first and second PMT_PID values are the same.

1 12. The method of claim 10, wherein the first program and the second program are
2 the same program, and the first and second set of PID values assigned to the
3 elementary streams of the program are the same.

1 13. The method of claim 10, wherein the output port associated with the first
2 session is the same as the second output port, and the numerical values of the first and
3 second PMT_PID values are related to the numerical values of the first and second
4 session numbers.

1 14. The method of claim 1, further including the steps of:
2 allocating a first set of PID values for use as PMT_PIDs, wherein only PIDs
3 from the first set of PID values are associated with PMT packets; and
4 allocating a second set of PID values for assignment to elementary streams of
5 programs, wherein only PIDs from the second set of PID values are assigned to
6 elementary streams of a program.

1 15. The method of claim 1, further including the steps of:
2 receiving a session message having a program identifier included therein;
3 determining the number of elementary streams of the identified program, wherein the
4 number of PID values in the set of PID values assigned to the elementary streams of
5 the program is less than or equal to the number of elementary streams of the identified
6 program.

1 16. An apparatus in a digital network that includes a transport stream having a
2 plurality of programs included therein, wherein a program is defined by a set of
3 elementary streams, the apparatus comprising:
4 means for assigning a session number to a session, wherein a session is
5 associated with a program of the transport stream;
6 means for assigning a PMT_PID to the session; and
7 means for allocating a set of PIDs to a set of elementary streams of a program.

1 17. The apparatus of claim 16, wherein the value of the PMT_PID assigned to the
2 session is related to the session number of the session.

1 18. The apparatus of claim 16, wherein the number of PIDs in the set of allocated
2 PIDs is no more than the number of elementary streams of the program.

1 19. The apparatus of claim 16, wherein the set of allocated PIDs have values that
2 are not contiguous.

1 20. The apparatus of claim 16, further including:
2 a plurality of output ports, each output port of the plurality of output ports
3 adapted to transmit a transport stream having at least one program,
4 wherein each program transmitted from an output port is associated
5 with a unique session number.

1 21. The apparatus of claim 20, wherein a first output port of the plurality of output
2 ports transmits a first transport stream, which includes a first program having a first
3 program number associated therewith, a second output port of the plurality of output
4 ports transmits a second transport stream, which includes a second program having a
5 second program number, which is different than the first program number, associated
6 therewith, the first and second programs each having a PMT identified by a PMT_PID
7 value associated therewith, and the first and the second PMTs have the same
8 PMT_PID value.

1 22. The apparatus of claim 21, wherein the first and second programs are the same
2 particular program, and the elementary streams of the particular program have the
3 same PID values in the first and second transport stream.

1 23. The apparatus of claim 20, wherein a first output port of the plurality of output
2 ports transmits a first transport stream, which includes a first program having a
3 program number associated therewith, a second output port of the plurality of output
4 ports transmits a second transport stream, which includes a second program having
5 the program number associated therewith, the first and second programs each having
6 a PMT identified by a PMT_PID value associated therewith, and the first and the
7 second PMTs have the different PMT_PID values.

1 24. The apparatus of claim 23, wherein the first and second programs are the same
2 particular program, and the elementary streams of the particular program have the
3 same PID values in the first and second transport stream.

1 25. The apparatus of claim 20, further including:
2 a first input port adapted to receive a session message having a program
3 identifier and an output port identifier included therein, wherein the
4 output port identifier identifies an output port of the plurality of output
5 ports;
6 a second input port in communication with the plurality of output ports, the
7 second input port adapted to receive a transport stream having a
8 plurality of programs included therein, wherein the plurality of
9 programs include a first program associated with the program
10 identifier; and
11 wherein the means for assigning a session number uses the session message to assign
12 a session number for a further session associated with the identified output port,
13 thereby including the first program in the transport stream transmitted from the
14 identified output port.

1 26. The apparatus of claim 16, wherein the means for assigning a session number
2 includes a session number map.

1 27. The apparatus of claim 26, wherein the session number map is an array of
2 elements having a first and second state, each element is associated with a session
3 number, the first state representing an unassigned session number and the second state
4 representing an assigned session number

1 28. The apparatus of claim 27, wherein the means for assigning a session number
2 searches the array of elements for an element in the first state and assigns the session
3 number associated with that element to the session, and changes the state of that
4 element of the array to the second state.

1 29. The apparatus of claim 27, wherein each element of the array is associated
2 with a PMT_PID.

1 30. The apparatus of claim 16, further including:
2 a plurality of output ports, each output port adapted to transmit a transport
3 stream therefrom; and
4 wherein the means for assigning session numbers includes a session number map, the
5 session number map including a plurality of arrays, each array associated with an
6 output port of the plurality of output ports.

1 31. The apparatus of claim 30, wherein each array of the plurality of arrays
2 include a plurality of elements, and each element is associated with a PMT_PID
3 value.

1 32. The apparatus of claim 16, wherein the means for allocating a set of PID
2 values includes a PID allocation map.

1 33. The apparatus of claim 32, wherein the PID allocation map includes an array
2 of elements associated with PID numbers.

1 34. The apparatus of claim 32, further including:

2 a plurality of output port, each output port of the plurality of output ports is
 3 adapted to transmit a transport stream having at least one program
 4 included therein; and
 5 wherein the PID allocation map includes a plurality of arrays, each array of the
 6 plurality of arrays including a plurality of elements and each array is associated with
 7 an output port, each element of the plurality of elements is associated with PID
 8 numbers.

1 35. An apparatus in a digital network that includes a transport stream having a
 2 plurality of programs included therein, wherein a program is defined by a set of
 3 elementary streams, the apparatus comprising:
 4 logic adapted to assign a session number to a session, wherein a session is
 5 associated with a program of the transport stream;
 6 logic adapted to assign a PMT_PID to the session; and
 7 logic adapted to allocate a set of PIDs to a set of elementary streams of a
 8 program.

1 36. The apparatus of claim 35, wherein the value of the PMT_PID assigned to the
 2 session is related to the session number of the session.

1 37. The apparatus of claim 35, further including:
 2 an output port adapted to transmit a transport stream having at least one
 3 program, and wherein the logic for assigning a session number
 4 includes a map that associates the session number with the output port.

1 38. The apparatus of claim 35, wherein the logic for assigning a PMT_PID
 2 includes a map of PID values.